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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,697	09/30/2003	Rahul Gupta	12406-170001	8145

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EXAMINER
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THOMPSON, CAMIE S

ART UNIT	PAPER NUMBER
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1794

MAIL DATE	DELIVERY MODE
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11/28/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/676,697

Applicant(s)

GUPTA ET AL.

Examiner

Camie S. Thompson

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed September 14, 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 5, 8, 10, 11, 13-21, 24, 25 and 28-31 is/are pending in the application.
- 4a) Of the above claim(s) 15-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 5, 8, 10-11, 13-14, 24, 25 and 28-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Examiner regrets the untimely reopening of prosecution.
2. Examiner regrets the untimely withdrawal of allowance for previously presented claim 32.
3. Applicant's amendment and accompanying remarks filed September 14, 2007 are acknowledged.
4. Examiner acknowledges amended claims 1, 8, 13-14, 18, 21 and 24.

### *Claim Rejections - 35 USC § 102*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-2, 24-25 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Young et al., U.S. Patent Number 6,720,090.

Young discloses an organic light emitting diode that comprises a substrate, an anode and a cathode disposed over the substrate; a luminescent layer disposed between the anode and the cathode wherein the luminescent layer includes a host (see column 3, line 66-column 4, line 15). Additionally, the reference discloses that the host serves as the medium or matrix for the

transport and recombination of charge carriers. It is disclosed by Young that there are two host components. Column 7, lines 33-39 of the reference discloses that the second host component can serve as a hole trap, an electron trap or both. Also, Young discloses that trapping injected carriers promotes electron-hole recombination in the second host component. Young discloses that the second host compound has a bandgap that is less than that of the first component (see column 7, lines 22-31). Column 11, lines 40-55 of the reference discloses that the first host component constitutes the largest volume fraction, followed by the second host component. The thermal energy is a constant at any particular temperature. For a particular temperature,  $kT$  (thermal energy) is not different for different layer compositions.

***Claim Rejections - 35 USC § 103***

**7.** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**8.** Claims 5, 8, 10-11, 13-14 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young et al., U.S. Patent Number 6,720,090.

**9.** Young discloses an organic light emitting diode that comprises a substrate, an anode and a cathode disposed over the substrate; a luminescent layer disposed between the anode and the cathode wherein the luminescent layer includes a host (see column 3, line 66-column 4, line 15). Additionally, the reference discloses that the host serves as the medium or matrix for the transport and recombination of charge carriers. It is disclosed by Young that there are two host

components. Column 7, lines 33-39 of the reference discloses that the second host component can serve as a hole trap, an electron trap or both. Also, Young discloses that trapping injected carriers promotes electron-hole recombination in the second host component. Young discloses that the second host compound has a bandgap that is less than that of the first component (see column 7, lines 22-31). Column 11, lines 40-55 of the reference discloses that the first host component constitutes the largest volume fraction, followed by the second host component. Column 4, lines 14-29 of the reference discloses that the emissive layer has a first host component, preferably a benzonoid compound; a second host component comprising one or more materials; a dopant material. The second host component has a bandgap that is less than that of the first component. Young does not specifically disclose third, fourth, fifth and sixth energy barriers. However, Young does disclose host components (first component and second component, comprising one or more materials and a dopant ) wherein one of the host components acts as an electron trap and/or hole trap and light emission occurs due to recombination at the second host component and would therefore have third, fourth, fifth and sixth energy barriers due to the materials present in the emissive layer in order to reduce hole mobility and electron mobility.

### ***Response to Arguments***

The withdrawal of the thermal energy subject matter is regretted by the examiner. On the record, applicant's arguments state that the thermal energy limitation as set forth in present claim

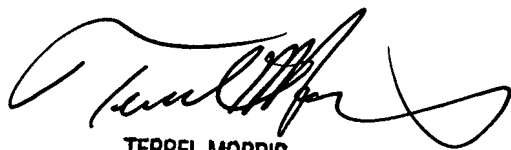
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1 is a constant and would be the same for any particular energy. Page 4 of the specification teaches thermal energy is  $kT$  and the thermal energy would be 0.0259 eV at a temperature at 300K. The Young reference is maintained

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (571) 272-1530. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena L Dye, can be reached at (571) 272-3186. The fax phone number for the Group is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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